THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte CHRISTOPHER J. WIELOCH

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Appeal No. 96-3357
Application 08/292,491[1]

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ON BRIEF

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Before BARRETT, RUGGIERO and LALL, Administrative Patent Judges.

LALL, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 5 and 23, claims 6 through 16 are canceled and claims

[1] Application for patent filed August 18, 1994.

17 through 22 have been indicated as allowable.[2]

The invention concerns a laminated or multilayer circuit board having an integral insulated mounting area for a packaged electrical device and a heat sink area. The surface mount package can be soldered directly to the mounting area, and a heat sink can be soldered directly to the heat sink area. The package contains an electrical device. The invention eliminates any need for hardware for attaching the heat sink and the surface mount package to the multilayer circuit board.

Representative claim 1 is reproduced as follows:

1. A multilayer circuit board for receiving a surface mount package having a lead frame, the multilayer circuit board comprising:

a first circuit board layer having a first top surface and a first bottom surface, the first top surface having a surface mount pad for physical and electrical connection to the lead frame, the bottom surface having a heat sink area opposite the surface mount pad; and

a second circuit board layer having a second top surface

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[2] There were two amendments after the final rejection. Amendment filed on November 7, 1995, [Paper No. 7] was not entered in the record, but that filed on March 12, 1996, [Paper No. 12] was entered.

and a second bottom surface, the second bottom surface being attached to the first top surface, the second circuit board layer being configured so that the surface mount pad is exposed, whereby heat is dissipated from the lead frame of the surface mount package through the first circuit board layer to the heat sink area.

The references relied on by the examiner are:

Brown	4,729,061	Mar. 1, 1988
Kuo et al.(Kuo)	4,731,701	Mar. 15, 1988

Claims 1 through 5 and 23 stand rejected under 35 U.S.C. § 102.[3] As evidence for the § 102 rejection, the Examiner offers in the alternative Kuo and Brown.

Reference is made to Appellant’s brief and the Examiner's answer for their respective positions.

OPINION

We have considered the record before us. We will reverse the rejections of claims 1 through 5 and 23.

Rejections Under 35 U.S.C. § 102

[3] The Examiner has withdrawn all the rejections under 35 U.S.C. § 112, second paragraph, thus leaving only these rejections under 35 U.S.C. § 102 for appeal here.

At the outset, we note the fundamental difference between the applied prior art and the invention as interpreted to be claimed. The invention requires the capability of receiving an electrical package device surface mounted on a mounting area on a first layer of a multilayer circuit board. This is clear from Appellant's statements in the specification and brief. Thus, for example, Appellant states that "The mounting layer has a pad configured for the semiconductor device on a first side and a heat sink area for the heat sink on a second side." [Specification, page 3, lines 20 to 23]. On page 5 of specification, Appellant says that "... circuit board 10 includes a surface mount electrical device 28 mounted on contact area 22 of board 10 within recess 27." [Lines 15 to 17]. Again, Appellant clarifies the invention by stating that "More particularly, Appellant provided a multilayer circuit board having a surface mount pad located in a cavity in the multilayer circuit board." [Brief, page 13]. The applied prior art does not deal with surface mounting. Nevertheless, we analyze below the rejection of claims 1 through 5 and 23 as presented by the Examiner.

We have considered the rejections presented by the

Examiner under 35 U.S.C. § 102 over Kuo or Brown. [Answer, page 3]. We have likewise reviewed Appellant's argument regarding each of these applied references. [Brief, pages 10 to 14]. We now consider the rejection of claim 1. The Examiner, on page 3 of the answer, states: "Concerning claim 1 ... and Kuo et al [sic], first layer 22, 24, 32, etc [sic] with pad 38 and a bottom `area' for spreader 18 is shown. The second layer reads on any of the upper 32 layers which are shorter and expose the package through the central opening." The Examiner in his interpretation of the claim has ignored the term "surface mount package" in the preamble of the claim. This would have been justified if this term or its resultant were not incorporated in the body of the claim. But, here, we agree with Appellant in that the invention is dedicated to the efficient surface mounting of an electronic device on a circuit board to accomplish maximum heat transfer without the need for additional hardware as is required by the prior art. [Brief, pages 11 and 12]. A surface mounted device or package is defined as "a device, the entire body of which projects in front of the mounting surface." The IEEE Standard Dictionary of Electrical & Electronic Terms, Sixth Edition, published by

The Institute of Electrical and Electronic Engineers, Inc. 1996. This, combined with the specification and the brief as discussed at the outset of this opinion, calls for a "surface mounted device" to be directly sitting on the mounting surface. Thus, the limitation "...the first top surface having a surface mount pad for physical and electrical connection to the lead frame," [claim 2, lines 5 to 7] is not met by Kuo. Even if we ignore the fact that Kuo does not show a lead frame and assume that an electrical and physical connection is provided by the wires 36 as they are bonded to pad 38, the configuration of pad 38 on the bonding tier 42 of layer 32 is such that die 14 cannot be surface mounted on it and still accomplish the needed heat transfer to the spreader 18 with any efficiency. We, therefore, conclude that Kuo is not directed to a circuit board for receiving a surface mount package.

Next, we consider the rejection under 35 U.S.C. § 102 over Brown. The Examiner, on page 3 of the answer, states that "Concerning Brown and claim 1 ... figure 10 is relevant." We again agree with the Appellant for the same rationale as for Kuo. Die 154 in Brown does not make a contact with pad

132 to meet the limitation of "...the top surface having a surface mount pad for physical and electrical connection to the lead frame,..." [Claim 1, lines 5 to 7].

Anticipation under 35 U.S.C. § 102 requires that all elements of the claimed invention be described in a single reference. In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990). Here, none of the applied references meets the limitations discussed above. We, therefore, reverse the Examiner's rejection of claim 1 under 35 U.S.C. § 102 over Kuo or Brown. Since, the other independent claim, namely 23 and the dependent claims 2 through 5 contain the same limitations as claim 1, their rejection under the same ground is also reversed.

DECISION

The decision of the Examiner rejecting claims 1 through 5 and 23 under 35 U.S.C. § 102 over Kuo or Brown is reversed.

REVERSED

LEE E. BARRETT Administrative Patent Judge	)
JOSEPH F. RUGGIERO Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
PARSHOTAM S. LALL Administrative Patent Judge	)

PSL/caw

Appeal No. 96-3357
Application 08/292,491

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